

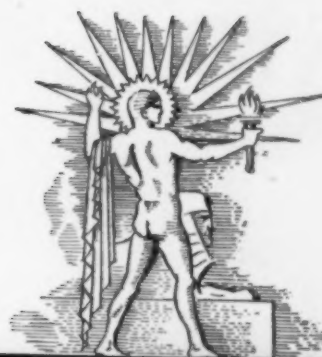
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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



JANUARY 31, 1931

Face to Face With an Insect Thug

See Page 68

A

SCIENCE SERVICE PUBLICATION

## SCIENCE NEWS LETTER

Vol. XIX

No. 512

The Weekly  
Summary ofCurrent  
Science

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## SCIENCE SERVICE

The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

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## DO YOU KNOW THAT

Oils from crocodile fat are being studied by chemists in India in the hope of making scientific use of these oils industrially.

Potato bugs that spend the winter underground take "anti-freeze" precautions, by getting rid of one-third their weight in water, which otherwise would freeze and burst the body cells.

The elk's favorite weapon, his forehead, is so powerful that a single blow has been known to break the back of a gray wolf.

Two Japanese scientists report that earthquakes in one part of Japan are most frequent when sun spots are at a maximum, and in another section earthquakes are numerous when sun spots are at a minimum.

Mistletoe, which attaches itself to other plants and robs them of food, has found its match in the creosote bush, which has the ability to withdraw the food in its stem, thus starving out the unwelcome parasite.

Africa has given treasure hunters of the world no less than 66 diamonds that weigh over 100 carats.

Only two students in American universities have won Ph.D. degrees in meteorology in the past ten years.

Fifty years ago, Thomas A. Edison built and operated an experimental electric railroad.

No one has yet produced ideal artificial sunlight, that is, sunshine having only the wave lengths present in natural light and in exactly the same proportions, the Engineering Foundation states.

The Rockefeller Foundation, through its researches, may be said to have cured more than ten million human beings of hookworm, largely through use of carbon tetrachloride.

Many modern cities have grown up on sites that Indians picked for their villages, chiefly because both Indian and white man recognized good places for habitation.

## WITH THE SCIENCES THIS WEEK

ANTHROPOLOGY		ENTOMOLOGY	
Eight Indian Types Found in Cemetery	71	House Centipede—Nature Rambles	78
ARCHAEOLOGY		Robber Fly	68
Aid for Ancient Art	68	Weed Cares for Beetle Enemy	79
Indians Who Met Ponce de Leon	74	ETHNOLOGY	
Roman Helmet Found	72	How Spirits Shake Indian Tent	79
Scientists Study Mound	73	GENERAL SCIENCE	
ASTRONOMY		First Glances at New Books	80
Eros' Brightness Becoming Steadier	73	GEOLOGY	
CHEMISTRY		Trifling Incident for Niagara	68
Better Oils and Gasoline	77	MEDICINE	
Chemist Treated With Radium	72	Effects of Liver Extract	77
Interest in Cornstalk Material	73	OCEANOGRAPHY	
Zinc, Cadmium and Mercury—"A Classic of Science"	75	Sea Sand Floated by Jelly	72
CHRONOLOGY		PHYSICS	
February, A Perfect Month	67	Ice Meets Its Match	69
ELECTRICITY		PHYSIOLOGY	
New Fast Cable	77	Cause of Dementia Praecox	67
EMBRYOLOGY		PLANT PHYSIOLOGY	
X-Ray Reveals Sex Before Birth	71	Effects of Liver Extract	77
ENGINEERING		PUBLIC HEALTH	
Ice Meets Its Match	69	Virulent Diseases in Liberia	72
		SOCIOLOGY	
		Proportionately Less Crime News	73
		Remarrying Widows	73

Science Service presents over the radio, an address

## THE PAPER MONEY OF THE UNITED STATES

By Walter E. Hope, assistant secretary of the U. S. Treasury.

Friday, February 6, at 3:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

## PHYSIOLOGY

# Lack of Iron May Cause Common Mental Disease

**Dementia Praecox Patients Lacking Iron in Brain Cells Suffer Like Men Not Breathing Enough Oxygen**

**A** LACK of sufficient iron in the brain cells of persons suffering from the mental disorder *dementia praecox* may make it impossible for them to utilize the oxygen they breathe, and the lack of oxygen may in turn account for their peculiar behavior.

This theory of the possible cause of a common mental disease was advanced by Dr. Walter Freeman of St. Elizabeth's Government hospital for the insane in Washington, in a report published in the *Archives of Neurology and Psychiatry*. Dr. Freeman was led to the discovery through following up the research of three other physicians who have been hunting a method of treatment for the disease.

Within the past year, Drs. A. S. Loevenhart, W. F. Lorenz, and R. M. Waters, of the University of Wisconsin, tried the experiment of administering a mixture of carbon dioxide and oxygen to *dementia praecox* patients who had sunk into a stuporous catatonic state. Startling changes in the condition of the patients resulted from the inhaling of these gases. From being stuporous and mute and mentally inactive, the patients then became active and communicative.

The mixtures given contained a much higher percentage of oxygen than ordinary air, and Dr. Freeman believed that the effect on the patients might be parallel to the mental effect on normal persons of increased atmospheric pressure. To assure himself of just what these effects were, he entered a tank used for tests at the Washington Navy Yard and in which the atmospheric pressure can be raised or lowered by air pumps to almost any desired degree.

## A Slowing Up

The effect of low oxygen concentrations he found to be a slowing up of mental activities, with a feeling of bewilderment, difficulty in thinking and seeing, and proneness to error which may eventuate in actual fainting. Increased oxygen tension, on the other hand, produces real stimulation, an effect which may be likened to that of

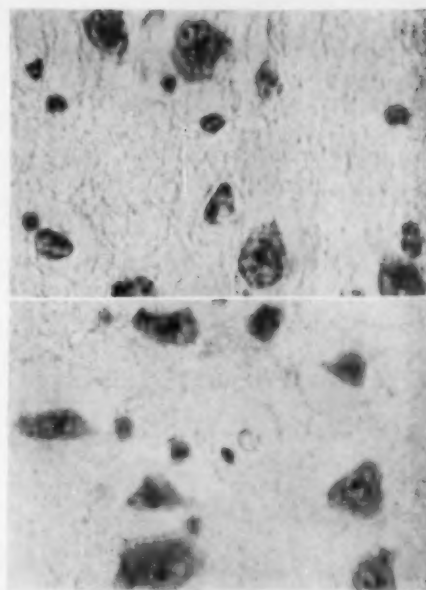
three cocktails without the attendant buzzing in the head.

It seemed to Dr. Freeman altogether reasonable to conclude that "The brain cells of schizophrenic patients may be unable to function normally because they cannot utilize the oxygen that is brought to them under existing conditions of atmospheric pressure, although they may perform their normal functions when the tension of oxygen is increased sufficiently to compensate for the defect."

But he also raised the question whether there might not be some defect in the brain of schizophrenic patients which would account for this inability to utilize oxygen. Microscopic and chemical examination revealed the fact that the brain cells of persons who had died with schizophrenia contained decidedly less iron than the brain cells of others.

Iron is a part of every living cell and is necessary to the process of oxygen metabolism. The reason that cyanide is such a deadly poison to cells is probably because it combines the iron in the cell to form an inert compound.

Dr. Freeman regards this discovery only in the light of a very promising



**IRON IN BRAIN CELLS**

Is made visible through the microscope by means of staining. The paleness of the cells in the bottom picture which are from a brain affected by *dementia praecox*, shows how they lack iron. The dark centers and distinct outlines of the cells at the top indicate the presence of considerably more of this mineral in the brain which does not have that particular mental disease.

lead for further research, and warns against the raising of false hopes of a *dementia praecox* "cure." Cures of this disease, like cures for cancer, are something which the medical profession is hoping for and earnestly working for, but so far they have proved elusive. At present he has found no way in which the deficiency in iron could be made up, although he has tried several methods without apparent benefit.

*Science News Letter, January 31, 1931*

## CHRONOLOGY

## February A "Perfect" Month Of The Simplified Calendar

**T**HE year 1931 contains a perfect month. This month is February, say proponents of the simplified calendar. It begins on a Sunday, and it has exactly 28 days, which this organization believes is a sufficient number of days for any month.

While more and more business organizations in the United States are adopting the simplified calendar for their business accounting, it is expected that a committee of the League of Na-

tions will take some action on a new world calendar this year.

The late Representative Stephen Porter of Pennsylvania, who was chairman of the House Foreign Affairs Committee, had hearings on the simplified calendar conducted before his committee in great detail. He had introduced a resolution which would enable the United States to take part in an international conference looking to calendar revision. No action was ever taken by



the House. In fact the House Foreign Affairs Committee never reported the resolution back to the House. Congress seemed disposed and still seems to be inclined towards waiting to see what other countries of the world want to do about it, before taking any decisive action.

The League of Nations conference on the reformed calendar occurs in October, 1931. The United States will be asked to send a delegate. A calendar reform treaty may be drawn up for submission

to the various governments, and if this is done, a date for enactment of the new calendar will be set in the protocol.

While it cannot be said that the United States has definitely committed itself as yet, certainly not legislatively at any rate, the National Committee on Calendar Reform in this country feels that sufficient evidence has been given that the United States welcomes the adoption of a new 13 month fixed calendar and is proceeding accordingly.

*Science News Letter, January 31, 1931*

#### GEOLOGY

## Recent Rock Fall a Trifling Incident in Niagara's History

There Were Once Five Falls and in the Future the Sheer Drop Will Wear Away to a Series of Cataracts

NIAGARA created a nation-wide sensation by staging a bit of a rock-slide and aroused all over again the discussion of various projects for "saving" the falls from the fate their natural erosion may bring them. But it's all a very old story to Niagara.

Some time between twenty-five and fifty thousand years ago, when the Ice Age on this continent was just ending and the Great Lakes, as we know them today, were still young, there were five Niagaras instead of only one.

The remains of these great falls have been found by geologists at a point quite remote from their single surviving sister. They thundered for centuries, with no human ear to hear them, in the region where Syracuse now stands. They were left high and dry when the level of the upper great lakes fell, and all the outlet-water was concentrated in a single river, the modern Niagara.

When the modern falls first started running they were about seven miles down-river from their present position. They have been backing up ever since, so that the recent rock fall is only a trifling incident in the whole history of the carving of the Niagara gorge.

The existence of Niagara Falls depends on the presence of a sheet of hard limestone overlying a thick bed of less resistant sandstones and shale. The churning water at the bottom of the falls, filled with broken fragments of hard rock, carves away the softer material from under the over-hanging edge whence the waters leap. From time to time pieces of the limestone break

off. Usually they are small; the recent slide was an exception. Thus the falls keep young by constantly peeling off bits of their face.

The history of the falls has been the same throughout their millenia of life up to the present. There will come a time, however, when there will be no more Niagara as we know it today, but a tumultuous series of cataracts dashing through tumbled gigantic blocks of stone.

This is because the capstone which forms the river-bed at Niagara dips slightly toward the south. Several miles upstream it disappears under a stratum of softer rock, which is not capable of forming a resistant rimrock for the river to jump from. When the river reaches this place, it will scour down through the soft stuff until it finds the limestone, break this up in great pieces and thereafter flow foaming and spouting through the obstacles it will thus pile up for itself.

But the generation that will see this still waits for a wholly undeterminable future.

*Science News Letter, January 31, 1931*

#### ARCHAEOLOGY

## Governor of Porto Rico Seeks Aid of Ancient Art

THE office of Gov. Theodore Roosevelt of Porto Rico has requested from the Smithsonian Institution in Washington information about old native art designs of the West Indies. It is Gov-



#### A MODEL FOR MODERNS

*An ancient bowl carved with a unique design by prehistoric inhabitants of the West Indies. Governor Roosevelt would revive these forgotten designs for use in the beautiful embroideries and textiles made by modern craftworkers of Porto Rico.*

ernor Roosevelt's hope that the art designs used by prehistoric inhabitants of the land may be revived and applied in the beautiful embroideries and textiles made by modern craftworkers.

H. W. Krieger, ethnologist of the Smithsonian Institution, said that the governor's request is being met by forwarding him a representative collection of designs from Indian tribes not only of the West Indies but also of Central and South America.

The ancient West Indian designs which would be best suited for application to textile arts are not on prehistoric objects, but may be found on the modern calabashes and gourds which the Indians use as dishes, Mr. Krieger said. On these the Indians still carve designs that were familiar to their forefathers many centuries ago.

*Science News Letter, January 31, 1931*

#### ENTOMOLOGY

## Robber-Fly Masquerades In Bumble-Bee's Clothing

See Front Cover

THE villainous-looking hexapod that glares at you from the cover of this week's SCIENCE NEWS LETTER is as bad a citizen as he looks. He is a robber-fly, who should by rights be called an assassin-fly, for his practice is to pounce upon other insects in the air, pierce them with his sharp beak, and bear them away to his cannibal feasting-place.

The robber-fly is not only an assassin; he hides his deadly trade under a disguise borrowed from a formidably armed but law-abiding member of a quite different insect family, the bumble-bee. Only a closer examination unmasks the cheat.

The photograph is by Cornelia Clarke.

*Science News Letter, January 31, 1931*

PHYSICS-ENGINEERING

# Ice Meets Its Match

## A Canadian Physicist is Using His Knowledge of the Behavior of Ice to Combat Winter's Paralyzing Cold

**M**AN'S great enemy at this season of the year is ice. Ice has ended for several months commerce between some of the most progressive nations. Their rivers and harbors are closed to vessels.

Ice is piled high in jams in important rivers so that cities along their banks are flooded. Icebergs are being born that in the spring will threaten the commerce of the world's most used ocean traffic lane. Airplanes are covered with ice and forced to descend. Even sidewalks and highways are sleeted to bring danger to man as he moves about. His wires of communication are swept down by ice.

But now a real effort to combat these forces of nature, against which man has been practically helpless for all time past, is being organized. It depends upon a material which has been used in industry for more than a quarter of a century as a heating agent for welding metal, while its possibilities as a weapon against ice were unknown. It is thermit, a substance which will generate in the heart of an iceberg a temperature nearly as great as that of the sun itself. Its application to the struggle against ice has been discovered in recent years by Dr. Howard T. Barnes, of McGill University, Montreal, who is still experimenting to find ways of using it most effectively.

As reinforcements to powerful thermit, are substances familiar to us all but of little use in the fight against ice until Dr. Barnes tested them and learned how to apply them to get the best results. There is sodium chloride, better known as common salt; calcium chloride, its first cousin; calcium carbide, the chemical that generates acetylene in the farm gas plant; and sulphuric acid. Even gravel, ashes, cinders, carbon, lamp black, and corn syrup are finding a place on the firing line against ice.

The story of how Dr. Barnes found that thermit is so effective against ice carries one back through a life-long study of this weapon of nature during which man learned some surprising facts about ice—facts that few of us know today.

For example, it has been shown that water is not the simple substance of two atoms of hydrogen and one of oxygen that the older chemistry books teach. Simple  $H_2O$  can exist only as dry steam, it has been found, while ice is a molecule made up of three groups of the two hydrogen and one oxygen atoms. Pure liquid water is the double molecule,  $H_2O$ , taken twice, but it can exist only just before water turns into dry steam at the critical temperature of about 695 degrees Fahrenheit.

Water, as we know it, is really a mixture of the double molecule and triple molecule. At normal atmospheric temperatures it contains about 30 per cent. ice, the triple molecule, in solution, but these particles of ice are so fine that they cannot be seen through a microscope. At the freezing point, however, the percentage of triple molecules increases and they begin to collect into groups large enough to be seen under the microscope.

This explanation of ice and water has made understandable the readiness with which water supplying power

houses in the north freezes and clogs the gates and water wheels. It is this frazil ice which causes trouble for the water power operator, and Dr. Barnes explains it thus:

"It only requires a few thousandths of a degree change in temperature in a stream to stop the operation of the largest water power development or to dam a mighty river and divert it from its course. Nowhere can one find a better example of the delicate poisoning of the forces of nature, since within the limits of so small a fluctuation such tremendous physical effects are produced.

"With the first cold weather in the autumn when the water comes to the freezing-point there is often a very large and sudden formation of frazil, the ice that accumulates from the minute particles. The explanation of this is exceedingly simple when we realize that the entire body of the stream is nearly 40 per cent. colloidal ice before freezing and coagulation takes place, when the temperature of the water has dropped a few thousandths of a degree.

"This mass of ice rapidly coagulates into streamers and subsequently into lumps and large clots which are carried in the current to great distances. So abundant is this formation that within a



THE SLOWEST EXPLOSION

*With a wonderful pyrotechnic display thermit begins a disintegrating action that will be felt for days.*

few minutes the whole stream may appear to be loaded with sand. During this time of supercooling these clotted masses of colloidal ice grow rapidly and freeze to any object with which they come in contact."

So slight is the temperature change required to melt frazil ice that energy enough to dispel it is contained in the light of the sun. Frazil forms over night, but in the early morning the radiant energy supplied by the sun loosens solidly frozen ice crystals and causes small ice particles to disappear.

Scientists have learned other strange things about ice and water. For instance, they have found that water will not always freeze even though its temperature is kept 10 or 15 degrees below the freezing point for hours. In experiments at the Ice Research Institute at Morrisburg, Ontario, water in a tank was cooled far below freezing and at the end of a half hour a pail of ice was taken out. But before another pail of ice was frozen a whole hour had passed, and two hours were required to freeze the third pail. Four hours later on ice had been produced.

"This extraordinary result," Dr. Barnes says, "can be explained on the colloidal theory. It is evident that a nucleus is required for the colloidal ice mass, and after exhausting these nuclei, the formation of further ice is rendered difficult."

Stranger yet, this same water could be

made to freeze readily again by warming. After it had been raised to room temperature and then cooled it would form ice as easily as before. Apparently the first freezings used up all the triple molecules in solution and more were quickly formed when the water was brought back to room temperature.

Armed with such facts as these about ice, Dr. Barnes was prepared to pick the best weapons with which to fight it. For ice jams in rivers, ice blocking harbors and icebergs he chose thermit as his chief weapon.

Thermit is a mixture of aluminum and iron oxide. It is cheap, easily obtained and easily handled. When ignited it explodes slowly and gives off an intense heat. A mass of molten iron is produced that is too bright to look at except with dark glasses. The temperature varies from 4,500 to 6,300 degrees Fahrenheit and is reached in a few seconds.

The aluminum reacts with the iron oxide and liberates molten iron. As soon as the white-hot flowing iron touches the ice or water a second chemical change takes place which breaks up the water into oxygen and hydrogen. The freed hydrogen burns in the air to produce a fantastic volcanic effect. Thus thermit gives two important essentials for ice fighting—heat and explosion. But the explosion makes little or no noise and is admitted by experts to be the slowest known. It will last for several seconds.

The reaction, then, is so intense that it affects ice the same way the sun does. Very little ice is actually melted. The important fact, as explained by Dr. Barnes, is that the energy pours out in a penetrating heat ray which overcomes the exceedingly small temperature effects responsible for the pranks and inconveniences caused by ice. It is possible to see thermit heat units glowing through several feet of water and ice masses, which proves the penetrating power of the radiation.

Thermit does not immediately tear away an iceberg or a river jam. It so cracks and weakens the ice that its effect is felt for several days after the actual explosion. When applied at the proper points as indicated by a thorough study of the problem, it is said to produce better and more economical results than any other form of explosive.

A big victory for thermit was the breaking up of a 25-mile ice jam in the Allegheny river which threatened to flood Franklin and Oil City, Pa. Five tons of thermit costing \$6,000, reinforced



#### PURE WATER

*To the naked eye, but the microscope reveals thousands of tiny ice particles. Such knowledge of how ice forms is enabling engineers to fight it more successfully.*

with dynamite, calcium chloride, ashes, sand and gravel were used. A steel bridge which had been raised by the ice 18 inches above its masonry foundation was lowered back in place without being swept aside by the jam. The effect of thermit on icebergs has also been listed by Dr. Barnes.

Other weapons in the warfare against ice do not have as immediate or as powerful an effect as thermit but when properly used they will more than repay their cost and the trouble of applying them. When the ice of a river is treated during winter months by these methods the spring break-up is hastened by at least two to three weeks. Certainly the opening of traffic to a large seaport half a month early is worth thousands of dollars.

Calcium carbide, calcium chloride, and sodium chloride have a powerful action in rotting and destroying surface ice in the coldest weather and they leave it so weakened that it offers no resistance to an ice shove. Young ice can be destroyed in a few minutes and channels for shipping opened in proportion to the economic desirability of such work.

Even gravel, ashes and cinders, which are often used to help clear the sidewalks, have a larger application. Together with charcoal and lampblack they are very useful scattered on surface ice where they draw the sun's heat and so hasten the destruction of ice jams.

*Science News Letter, January 31, 1931*



#### THERMIT UNIT

*Which will be sunk in the ice to tear away a jam.*



## ANTHROPOLOGY

# Eight Indian Types Found in Cemetery Used 1,000 Years

First Study of Millenium of Human Life in Fair-Sized American Town Reveals Interesting Facts About Its People

**N**O LESS than eight different physical types of distinct racial affinities are represented in the skulls of Indians in a single graveyard, is the conclusion of Dr. E. A. Hooton, anthropologist of the Peabody Museum of Harvard University.

This is the first time that science has had the opportunity of examining a thousand years of human life in a fair-sized American town, as represented in the bones of successive generations of inhabitants.

## Bones Studied 10 Years

For ten years Dr. Hooton has been studying bones obtained from the most remarkable prehistoric graveyard of the Southwest, at the pueblo known as Pecos in New Mexico. Pecos was inhabited by Pueblo Indians for a thousand years, from about 800 A.D. to 1838 A.D. In those centuries, generations of inhabitants left veritable hills of trash, consisting of ashes, dinner bones, broken clay dishes, worn-out flint tools, all mixed in with a binder of earth. And in among that refuse, thousands of dead were buried, in as many as nine different levels.

From his examination of 1,254 burials, men, women, and children, the anthropologist has made long statistical tables of measurements, which are included in his first thick report on the "Indians of Pecos" just published.

Various types of people came into the prehistoric American melting-pot in waves of immigration, according to Dr. Hooton's theory. The earliest came over Bering Strait, probably soon after the glacial retreat, and these were a people already racially mixed and having a primitive hunting and fishing culture. They were a blend of three racial strains: the Mediterranean, the pseudo-Australoid, and a Negroid strain, not to be confused with the Negro.

Somewhat later, Mongoloid groups followed the same route. These were capable of the higher Indian civilizations which developed in certain favored regions of prehistoric America. And

last of all came the Eskimo, who were Mongoloid with some non-Mongoloid strain in their heredity.

These, Dr. Hooton concludes, made up the family tree branches of the American natives of pre-Columbian times. If men reached the New World in Pleistocene, that is earlier, times, he believes that the early arrivals were so few as to leave almost no trace of their culture.

Studying signs of disease in the bones of Pecos inhabitants, Dr. Hooton concluded that the most common bone disease was arthritis. Poker-back, a severe arthritic condition of the vertebrae which stiffens the spine, was found in more than 13 per cent. of the individuals over 18 years old. Practically another four per cent. had arthritis of other bones and joints. Clear evidence that the Pueblos had sinus and mastoid troubles, and possible indications of cancer and tuberculosis of the spine were found in a few cases.

Whether or not syphilis was a disease of prehistoric America still remains in doubt, Dr. Hooton's study indicates.

## EMBRYOLOGY

# New X-Ray Method Reveals Sex Before Birth of Baby

**W**HETHER to trim the baby basket in pink or blue, always a vital problem to young married couples, can now be determined as early as three months before the birth of the expected child through the use of a new X-ray photographic method developed by Dr. Thomas O. Menees, of the Blodgett Memorial Hosital, Grand Rapids, Michigan, who exhibited his photographs to the American Association for the Advancement of Science in Cleveland.

This new method of ascertaining the sex of the unborn baby many weeks before birth is expected to relieve the

Three crania which were thought to be possibly syphilitic specimens were examined by Prof. Herbert U. Williams, of the University of Buffalo, who has been studying skeletal material for some years in the hope of tracing the origin of syphilis. Prof. Williams concluded that the pathological changes in the crania probably were signs of syphilis, but he also said that he could not be positive that any single dried bone specimen is syphilitic. Prof. James Ewing of Cornell Medical School also examined the three crania and handed down the opinion that they were not syphilis cases.

"It is unfortunate that qualified experts should have disagreed in the three cases under discussion," Dr. Hooton commented, "since all of them are undisputably prehistoric—a statement which cannot be made concerning most remains of American Indians thought to be syphilitic."

"Towards the end of Pecos' long habitation, the physical deterioration of its people became apparent," the anthropologist concluded. "Teeth became poorer; rheumatism and other diseases identifiable from the bones were commoner. Stature decreased slightly, and the population blended into comparative homogeneity. Similarly, arts and industries declined, and finally disease and raids of predatory plains Indians reduced a town of 3,000 or 4,000 inhabitants to a mass of tumbledown ruins from which seventeen forlorn survivors departed in 1838."

*Science News Letter, January 31, 1931*

anxiety of prospective parents who under present circumstances are impatient to know whether their offspring is a boy or girl.

No hope is held out that the new method developed by Dr. Menees, or any other known method, can be used to assure the mother giving birth to a child of the sex most desired by the parents. The sex of the child is determined at the very beginning of its prenatal life and seems to be dependent upon chance.

Dr. Menees has made several successful diagnoses of sex of unborn babies. The method consists (*Turn to page 74*)

## OCEANOGRAPHY

**Sand of Sea is Floated By Vegetable Jelly**

**G**RAINS of sand "travel soft" when they are borne about on the sea bottom by waves and currents. They ride cushioned in a kind of vegetable jelly, researches of Dr. P. E. Raymond and H. C. Stetson of Harvard University have disclosed. The two Harvard scientists report their findings in *Science*.

In an effort to find when and how sea sand migrates along the bottom, the two investigators laid specially designed "sand traps" on the floor of the sea in a number of places. When they hauled them up and examined the contents they found that instead of just sand the apparatus contained a lot of gelatinous stuff.

Embedded in this were sand grains in great quantity, forming as much as 85 per cent. of the dry weight of the total catch. It appears quite likely that this jelly plays a considerable role in the distribution of marine sediments, floating sand and particles farther than they would be carried by the water if they were left to their naked selves.

The source of this natural jelly, which has been observed by other scientists but never closely studied until now, is still more or less of a mystery. Apparently, however, it comes from the decaying remains of eel grass, a very abundant underwater weed, with possible additions from seaweed and other marine vegetation.

*Science News Letter, January 31, 1931*

## PUBLIC HEALTH

**Many Virulent Diseases Found in Liberia**

**D**ARKEST Africa now has light, but it has no health. Such at least is the case in the western corner of the continent that makes up the republic of Liberia.

The light of civilization was brought to that country over 100 years ago. That it has not brightened the scene is now being made apparent. One of the darkest sides of the picture is found in the health conditions of the country.

A host of tropical diseases and many non-tropical ones are rife there. Among them are malaria, blackwater fever, leprosy, elephantiasis, yaws, syphilis, smallpox, chicken pox, sleeping sickness, pneumonia, yellow fever, tuberculosis, rheumatism, dysentery, beriberi,

and nutritional diseases. About the only ones missing are bubonic plague and relapsing fever.

Public health and sanitation are absolutely lacking. There is no public water supply. Even in the capital city, Monrovia, wells and cisterns are the only sources of water. There is also no sewage system, and the wells are dug in the extremely porous soil of the back yards where the outhouses are found.

Three or four physicians and "one building called a hospital" represent the extent of medical facilities for the entire country of 43,000 square miles with a population of about 2,012,000.

In spite of extremely fertile soil and equable climate, the governing class of Americo-Liberians and all the visiting foreigners must get their fruits and vegetables out of cans. Such is the picture of the country painted by the Harvard African Expedition and by Dr. Howard F. Smith of the U. S. Public Health Service.

While the country is bankrupt, lack of funds is not the only hindrance to sanitation and health work, Dr. Smith found. He was sent to Liberia shortly after the last American Minister to the country, Charles B. Francis, died there of yellow fever. Dr. Smith expected to assist the Liberian government organize its sanitary and public health activities, particularly with reference to the eradication of yellow fever, in accordance with an agreement between the American and Liberian governments. He has returned because complete lack of cooperation from the Liberian government made his mission a failure.

Liberia's diseases and her lack of public health work are not without importance to the rest of the world. The country has been called "one of the festering spots of West Africa." Liberia's immediate neighbors, Sierra Leone, Nigeria and the Gold Coast Colony, all have active departments of public health, and all are concerned over the situation in Liberia. These other countries have tried to stamp out yellow fever within their own borders. Yet they can never feel safe because the disease is always present in Liberia, and may at any time be brought over the border.

Liberia does not report her health conditions to either the League of Nations or the Office International, and never has done so, although she is a member of the League and a signatory to the International Sanitary Convention of 1926.

*Science News Letter, January 31, 1931*

**IN SCIENCE**

## ARCHAEOLOGY

**Roman Helmet Is Found In German Village**

**A** ROMAN helmet in a splendid state of preservation, probably once the property of an imperial officer, has been unearthed in Nida-Heddernheim, near Frankfurt-am-Main. There was once an extensive Roman encampment there, the exploration of which is described by Dr. Karl Woelcke, of the municipal historical museum at Frankfurt.

The helmet, which is richly ornamented with silvered bronze, has a pronounced flare at the bottom of its neck-piece, giving the wearer's shoulders partial protection. It is also provided with hinged flaps to cover the cheeks and jaw.

*Science News Letter, January 31, 1931*

## CHEMISTRY

**Dying Chemist Treated With Radium He Isolated**

**R**ADIUM that he had isolated from American ores aided in the fight to save the life of Dr. Richard B. Moore, chemist, who succumbed to brain tumor and double pneumonia at Memorial Hospital in New York last week.

About half of the million dollars' worth of radium extracted by Dr. Moore's process by the National Radium Institute at Denver which he directed just before the war was sent to Memorial Hospital for the treatment of cancer. When Dr. Moore became ill with brain tumor that could not be removed surgically, he came to New York where the powerful radiations of the element he produced could be used in attacking the disease.

While with the Bureau of Mines, Dr. Moore pioneered in the extraction of helium from natural gas which gave American airships a safe, non-inflammable lifting gas. He was chief chemist of the Bureau of Mines from 1919 to 1923. At the time of his death he was dean of science and head of the chemistry department at Purdue University.

*Science News Letter, January 31, 1931*



# SCIENCE FIELDS

## CHEMISTRY

## Industrial Interest in New Cornstalk Material

**S**O MUCH public interest has been aroused in the substance, maizolith, developed by C. E. Hartford, Jr., at the U. S. Bureau of Standards, that the Bureau has had to take up the work again to meet the demand for samples.

The story of maizolith concerns a senior student at the Iowa State College and his laboratory thesis.

Young Mr. Hartford, who was working for a degree at Iowa State, discovered that if cornstalk pulp is put through certain mechanical operations and then combined with water, it will form a tough jelly. When this jelly dries it is tough and horny and much like hard rubber.

The Bureau of Standards asked Mr. Hartford to come on the government payroll and work on his cornstalk rubber. Mr. Hartford came to Washington, completed his work, wrote a paper on it, and resigned. The Bureau considered the matter closed and the work finished, but suddenly there developed such a continuous public demand for samples of maizolith, that a man had to be put back on the cornstalk rubber detail.

*Science News Letter, January 31, 1931*

## ASTRONOMY

## Eros' Brightness Seen Becoming Steadier

**T**HE variability of the asteroid Eros is rapidly dying out, and it is shining with a steadier light as it approaches the earth. According to observations made at the Harvard Observatory by Leon Campbell, the amplitude of these variations in brightness has decreased fifty per cent. in fourteen days, and the variation is now only half a magnitude.

This behavior on the part of Eros is similar to that observed at Harvard by Wendell during the favorable opposition nearly thirty years ago. The complete dying out of the asteroid's variability during the next few weeks is a possibility.

Photographic observations at the Nantucket Observatory before Christmas showed a thirty per cent. increase in the range of variability.

The variability, or periodic change in brightness, is supposed to be due to differences in the reflecting qualities of different parts of its surface, as the asteroid spins about on its axis once in every five hours and sixteen minutes. The decrease in variability may be due to an improvement in the reflecting angle between the sun, Eros, and the earth, as we get closer to a straight-line position in space; for the period of variability remains the same though the amount of variability has greatly decreased.

This was the interpretation placed by H. E. Burton, astronomer of the U. S. Naval Observatory, upon the report from Harvard.

*Science News Letter, January 31, 1931*

## SOCIOLOGY

## Proportionately Less Crime News Published

**C**ONTRARY to popular belief, modern newspapers present news of crime much less extensively than they did 25 and 40 years ago.

The amount of crime material available for publication, measured by court records, has nearly tripled since 1890, and yet newspapers have actually decreased the percentage of their news space devoted to crime.

Sensational sex crimes are not nearly as important to the city editor of the present decade as they were to his predecessor in 1905; and such stories were even more eagerly sought and published by editors of the gay 90's.

These are some of the facts learned by Dr. Frank Harris of Elmira College, Elmira, N. Y. Dr. Harris based his conclusions on detailed examination and study of crime news published by three newspapers of Minneapolis during 1890, 1905 and 1921. Court records for the same years were examined so that proper allowance could be made for the increase of crime.

Dr. Harris believes that his results will apply generally throughout the country, as all newspapers of the United States conform largely to a standard pattern. He also thinks that the decrease in attention given crime news continues past 1921, the last year of the study, though not as rapidly as between 1905 and 1921.

*Science News Letter, January 31, 1931*

## ARCHAEOLOGY

## Scientists Study Mound As Contractor Destroys It

**V**ALUABLE data regarding the mound builders of prehistoric America have been obtained at the famous Powell Mound on the outskirts of East St. Louis. The mound was one of the largest of the Cahokia group, and was most symmetrical, and perfectly preserved.

Destruction of the mound by steam shovel was begun during December to provide soil for truck growing. Real estate developments made the price too high for straight purchase and inclusion of the mound in the Cahokia State Park, but the University of Illinois has maintained an archaeological field party on the site during excavations.

It is now shown that the Indian mound was built in successive stages. A unique burial platform inside it was carefully explored by trowel by the archaeologists. A remarkable wooden object covered with sheet copper is a relic of a game played in this region in early times. And thousands of shells show that these Indians had contact with Florida and the Gulf of Mexico.

*Science News Letter, January 31, 1931*

## SOCIOLOGY

## One-Fourth of Widows Less Than 21 Years Remarry

**W**HETHER a woman is likely to marry again after losing her husband depends a great deal on her age at the time she becomes a widow, Dr. Frank M. Phillips found when he made an investigation of the duration of widowhood as chief of the statistical division of the U. S. Employee's Compensation Commission.

Over one-fourth of the young widows under 21 years of age marry during the first two years after the death of the husband. And the number of remarriages decreases proportionately with the age of the widow. Only seven remarriages occurred among the 604 widows who were 45 or over.

Only a few remarriages occur during the first year of widowhood. The greatest number, 67 out of the 1,915 widows studied, remarried during the second year. A total of 304 remarriages took place, that is, about 15 per cent. of all the widows remarried during an average of six years of widowhood covered by the study.

*Science News Letter, January 31, 1931*

## TEACHERS COLLEGE New X-Ray Method Reveals Sex



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## New X-Ray Method Reveals Sex

(Continued from page 71)

of injecting into the surroundings of the unborn baby a small amount of concentrated solution of strontium iodine. This practically harmless chemical has the property of being relatively opaque to the X-rays, and the fleshy parts of the baby as well as its tiny bones can be identified on the X-ray photograph. The effect of the injection fades after two or three hours and en-

tirely disappears in a day. Dr. Menees calls the method "amniography."

More important to the physician and to the mother is the fact that amniography can be used to ascertain in doubtful cases whether a Cæsarian section will be necessary in order that the child may be safely born. It will probably be used much more frequently for this purpose than for ascertaining sex.

Science News Letter, January 31, 1931

#### ARCHAEOLOGY

## Expedition Seeks Indians Who Met Ponce de Leon

DOWN the east coast of Florida, and into the depths of the Everglades, an expedition is about to seek prehistoric Indians. The region is "unknown Florida" from an archaeological point of view. The tribe that is sought is paradoxically famous in history and yet almost unknown scientifically.

The expedition, consisting of Matthew W. Stirling, chief of the Bureau of American Ethnology, and his brother, G. M. Stirling, of the Peabody Museum of Harvard, left Washington last week.

Parts of Florida are dotted over today by mounds left by the Calusa tribe, Mr. Stirling said. These Indians were the tribe that met Ponce de Leon and disappointed the Spaniard by giving him no aid in the quest for a fountain of youth. The Calusa themselves must have given an impression of physical vigor, for bones that have been found show that they were muscular and husky in type. The jaw bones of these Indians are even larger than Eskimo jaws, Mr. Stirling said.

Despite individual strength and tribal power, the Calusa were exterminated soon after white men came into Florida. The early explorers left practically no information about these unusual natives, and today archaeologists are beginning to re-discover them by unearthing their graves and their possessions.

The Stirling expedition will start from Cape Canaveral on the east coast of Florida and work southward, searching particularly for mounds that may represent villages mentioned by Spanish and French chroniclers. Historic sites here would be of great value to archae-

ology, Mr. Stirling said. At such places it is possible to trace the changes in Indian life that came by contact with the white man, and to sort out the real native factors.

Then, traveling into the Everglades, the archaeologists will try to locate old mounds that modern natives have reported. Excavating will be started at one or more promising sites here or on the coast, it is expected.

Some ethnologists have hoped that a remnant of the Calusa might have survived in the Everglades, mixing there with the Seminoles who came down to Florida about the eighteenth century, Mr. Stirling explained. But if that happened, he added, the Calusa stock would be absorbed by the Seminoles by now, so that the type could no longer be identified. Some Calusa words might have survived if the two tribal groups met, and language specialists may yet be the ones to find evidence that a remnant of the prehistoric tribe lived on in the heart of Florida when their land was "discovered."

Science News Letter, January 31, 1931

### G. Stanley Hall

Said:

"As for years, an almost passionate lover of childhood and a teacher of youth, the adolescent stage of life has long seemed to me one of the most fascinating of all themes." His description of

### Adolescence

is

Next's Week's Classic of Science

CHEMISTRY

# Zinc, Cadmium and Mercury

## "A Classic of Science"

### A Modern Metal, an Ancient One and the First Metal To be Added to the Alchemists' Famous Group of Seven

#### Zinc—Paracelsus, About 1530 A. D.

*THE HERMETIC AND ALCHEMICAL WRITINGS OF AUREOLUS PHILIPPUS THEOPHRASTUS BOMBAST, OF HOHENHEIM, CALLED PARACELSUS THE GREAT. Now for the first time faithfully translated into English. By Arthur Edward Waite. In two volumes, Vol. I. London: 1894.*

**S**UCH and so many in number are the metals, as I have reckoned them up, namely, gold, silver, tin, lead, iron, steel, female copper, and male copper. Thus they are eight in number. But if—as cannot be the case—iron and steel, and male and female copper respectively, are reckoned each as one metal, there would be only six, and the arrangement would be inconvenient. There are seven well-defined and publicly known metals: gold, silver, tin, lead, iron, steel, and copper, the last being reckoned as one metal, since the male and female are wrought together and not separated, as they ought to be.

#### Of Mixed Metals:

You perceive, from what has been already said, that the male is not always solitary without a consort, but often they co-exist, as in the cases of gold and silver, iron and steel, which grow together in one working, from which each retains its own special nature, but still they are mixed so that one does not impede the other, nor are they of their own accord separated one from the other. Such, too, is often the case with tin and lead. But where they are thus joined no good result ensues from them. They do not square into one body; but it is better that each should be separated into its own body.

#### Concerning Spurious Metals:

Metals can be adulterated. Only gold and silver mix with the other metals, for the reason that they are the most subtle. Only, therefore, when such a primal matter is present, does each grow up together by itself. It may easily be

that six or seven different fruits shall be grafted together on the same tree; and there is the same marvellous kind of implantation here in Nature.

#### Concerning Zinc:

Moreover, there is a certain metal, not commonly known, called zinc. It is of peculiar nature and origin. Many metals are adulterated in it. The metal of itself is fluid, because it is generated from three fluid primals. It does not admit of hammering, only of fusion. Its colours are different from other colours, so that it resembles no other metals in the condition of growth. Such, I say, is this metal that its ultimate matter, to me at least, is not yet fully known. It does not admit of admixture; nor does it allow the fabrications of other metals. It stands alone by itself.

#### Concerning Quicksilver:

There is, moreover, a certain genus which is neither hammered nor founded; and it is a mineral water of metals. As water is to other substances, so is this with reference to metals. So far it should be a metal as Alchemy reduces it to malleability and capacity of being wrought. Commonly it has no consistence, but sometimes it has. The right opinion about it is that it is the primal matter of the Alchemists, who know how to get from it silver, gold, copper, etc., as the event proves. Possibly also tin, lead, and iron can be made from it. Its nature is manifold and marvellous, and can only be studied with great toil and constant application. This, at all events, is clear, that it is the primal matter of the Alchemists in generating metals, and, moreover, a remarkable medicine. It is produced from Sulphur, Mercury, and Salt, with this remarkable nature that it is a fluid but does not moisten, and runs about, though it has no feet. It is the heaviest of all the metals.

#### Cadmium—Stromeyer, 1818

NEW DETAILS RESPECTING CADMIUM. By M. Stromeyer. In

*Annals of Philosophy; Vol. XIV, October, 1819 (From Annalen der Physik, lx. 193).*

**M.** STROMEYER has communicated to the Royal Society of Göttingen, at the meeting of Sept. 10, 1818, the first part of his researches on the new metal which he discovered in zinc and its oxides, and to which he has given the name of *cadmium*. Assisted by two of his pupils, M. Mahner, of Brunswick, and M. Siemens, of Ham-burgh, he has not only verified his first results, but has been able to give a greater extent to his researches, and to reduce them to a great degree of precision. He states that he has explained more fully the circumstances which led to the discovery of cadmium; and in that way has shown the part which M. Hermann, of Schoenbeck, and Dr. Roloff, of Magdeburg, had in it. He gives likewise the names of the different species of zinc, of its oxides, or of its ores, which contain cadmium. Among these last, M. Stromeyer has found it only in a very small proportion in some blends with the exception of some



"PARACELSUS",

*Theophrastus Bombast, namesake of the famous Greek philosopher. His surname has given us the adjective "bombastic," which tells what his contemporaries thought of this medieval alchemist and physician.*



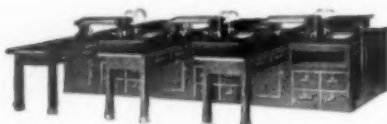
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varieties of radiated blende of Przibram, in Hungary, which contains two or three per cent. of it. He likewise gives the process for procuring cadmium in a state of purity.

According to this process, we begin by dissolving in sulphuric acid the substances which contain cadmium, and through the solution, which must contain a sufficient excess of acid, a current of sulphuretted hydrogen gas must be passed. The precipitate formed is collected and well washed. It is then dissolved in concentrated muriatic acid, and the excess of acid driven off by evaporation. The residue is dissolved in water, and precipitated by carbonate of ammonia, of which an excess is added to redissolve the zinc and the copper that may have been precipitated by the sulphuretted hydrogen gas. The carbonate of cadmium, being well washed, is heated to drive off the carbonic acid, and the remaining oxide is reduced by mixing it with lamp-black, and exposing it to a moderate red heat in a glass, or earthen retort.

The colour of cadmium is a fine white, with a slight shade of bluish-grey, and approaching much to that of tin. Like this last metal, it has a strong lustre, and takes a good polish. Its texture is perfectly compact, and its fracture hackly. It crystallizes easily in octahedrons, and presents at its surface on cooling the appearance of leaves of fern. It is soft, very flexible, and yields readily to the file, or the knife. It stains pretty strongly; however, it is harder than tin, and surpasses it in tenacity. It is likewise very ductile, and may be reduced to fine wires, or thin plates; yet, when long hammered, it scales off in different places. Its specific gravity, without being hammered, is 8.6040, at the temperature of 62°; when hammered, it is 8.6944. It melts before being heated to redness, and is volatilized at a heat not much greater than what is necessary to volatilize mercury. Its vapour has no peculiar odour. It condenses in drops as readily as mercury, which, on congealing, present distinct traces of crystallization.

Cadmium is as little altered by exposure to the air as tin. When heated in the open air, it burns as readily as this last metal, and is converted into a brownish-yellow oxide, which appears usually under the form of a smoke of the same colour; but which is very fixed. Nitric acid dissolves it easily cold; diluted sulphuric acid, muriatic acid, and even acetic acid, attack it with disengagement of hydrogen gas; but their



**FRIEDRICH STROMEYER**

*Discoverer of the metal cadmium, one of the leaders of early nineteenth century mineralogical chemistry.*

action is very feeble, especially that of acetic acid, even when it is assisted by heat. The solutions are colourless, and are not precipitated by water.

### Mercury—Theophrastus, About 300 B. C.

*THEOPHRASTUS'S HISTORY OF STONES. With an English Version and Notes. By Sir John Hill. London: MDCC LXXIV (1774).*

THERE are also two kinds of Cinnabar, the one native, the other factitious; the native, which is found in Spain, is hard and stony; as is also that brought from Colchis, which they say is produced there in Rocks and on Precipices, from which they get it down with Darts and Arrows. The factitious is from the Country a little above Ephesus; it is but in small Quantities, and is had only from one Place. It is only a Sand, shining like Scarlet, which they collect, and rub to a very fine Powder, in Vessels of Stone only; and afterwards wash in other Vessels of Brass, or sometimes of Wood: What subsides they go to work on again, rubbing it and washing it as before. And in this Work there is much Art to be used; for from an equal Quantity of the Sand some will make a large Quantity of the Powder, and others very little, or none at all. The Washing they use is very light and superficial, and they wet it every time separately and carefully. That which at last subsides is the Cinnabar, and that which swims above in much larger Quantity is

only the superfluous Matter of the Washing.

It is said, that one *Callias*, an *Athenian*, who belonged to the Silver Mines, invented and taught the making of this artificial Cinnabar. He had carefully got together a great Quantity of this Sand, imagining, from its shining Appearance, that it contained Gold: But when he had found that it did not, and had had an Opportunity, in his Trials, of admiring the Beauty of its Colour, he invented and brought into use this Preparation of it. And this is no old Thing, the Invention being only of about ninety Years Date; *Praxibulus* being at this Time in the Government of *Athens*.

From these Accounts it is manifest, that Art imitates Nature, and sometimes produces very peculiar Things; some of which are for Use, others for Amusement only, as those employed in the ornamenting Edifices; and others, both for Amusement and Use. Such is the Production of Quicksilver, which has its Uses: This is obtained from native Cinnabar, rubbed with Vinegar in a brass Mortar with a brass Pestle. And many other Things of this kind others, perhaps, may hit upon.

*Science News Letter, January 31, 1931*

#### CHEMISTRY

### Hydrogenation to Bring Better Oils and Gasoline

**S**UPERIOR lubricating oils and gasoline prepared by combining lower grade oils with hydrogen are going to produce a marked gain in automobile engine efficiency.

Details of the engineering advantages of the new products were described in Detroit before the annual convention of the Society of Automotive Engineers, by R. T. Haslam and W. C. Bauer, of the Standard Oil Development Co.

This method of treating crudes and low grade oils with hot hydrogen under a pressure of 4000 pounds per square inch has been developed jointly by the German I. G. Farbenindustrie and the Standard Oil Company of New Jersey. The possible other use of hydrogenation in producing gasoline artificially from coal makes it of immense economic importance. So it has been the subject of much experimentation.

Hydrogenation improves the quality of the oil for lubricating or fuel purposes in three ways. Unwanted nitrogen, oxygen or sulphur compounds are removed as gas. The hydrogenated

product has better keeping qualities. Also resinous or gummy substances are found to be absent after the treatment.

Hydrogenated lubricating oils which can be made from common crude unrefined oils are superior to the highest grade natural lubricants now available.

The new gasolines are richer in the naphthenic or ring hydrocarbons and therefore superior in antiknock properties. As they can be made from low grade oils the saleable yield of gas is increased. There is no reason why the use of hydrogenated gasoline should not become widespread and the way thus opened to the engineer to design engines operating at greater compressions, higher temperatures and higher speeds than at present.

*Science News Letter, January 31, 1931*

#### PLANT PHYSIOLOGY-MEDICINE

### Effects of Liver Extract On Plants and Man

**T**HE most effective cure for anemia, liver extract, seems to be effective also in checking the pale yellowness of plants grown in the dark, which is a kind of vegetable anemia. Prof. Oran Raber of Immaculata College, Pennsylvania, has found. He reported results of his experiments to the American Association for the Advancement of Science in Cleveland.

Plants kept in the dark and fed with liver extract kept their green color much longer than did others not so treated. This suggests, Prof. Raber pointed out, a physiological relationship between hemoglobin, the red coloring matter of

the blood, and chlorophyll, the green coloring matter of plants. The evolutionary relationship between these two pigments has long been a matter of botanical study.

A case of bronchial asthma caused by eating liver and subsequently by taking liver extract has been reported to the American Medical Association by Dr. Edward Matzger of San Francisco. The liver was taken to treat the primary anemia from which the patient suffered.

He had suffered from asthma about 15 years ago, but on moving to the country the asthma improved greatly and remained so even after his return to the city eight years later, complaining of symptoms of anemia. The liver treatment relieved the anemia, but after one week of the liver diet the asthma became constant and persisted until the liver was discontinued. The same thing occurred when liver extract was taken.

Dried hog's stomach made a satisfactory substitute for the liver. It relieved the anemia without causing the asthmatic attacks. The patient was then immunized to rye pollen and house dust and thus freed of the asthma.

*Science News Letter, January 31, 1931*

#### ELECTRICITY

### New Cable Sends 2500 Letters a Minute

**O**NE OF the latest advances in telegraphic communication, a cable between Newfoundland and the Azores over which 2500 letters a minute can be sent in one direction or 1400 letters in each direction at the same

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time, was described before the American Institute of Electrical Engineers in New York City.

The new cable is a part of the Western Union transatlantic system making land connection at Bay Roberts, Newfoundland, with New York City, and cable connection at Horta, Azores, with German and Italian communications, it was explained by J. W. Milnor and

G. A. Randall, telegraph engineers located in this city. The final splice was made in September, 1928.


"This cable combines the advantages of high speed operation characteristic of the new continuously loaded cable, with the facility of duplex, or two-way operation, inherent in the old non-loaded type of cable," the engineers stated. "The duplex speed is several times as high as that of any long cable that has previously been duplexed, and provides the greatest message carrying capacity of any existing trans-ocean cable."

A cable of such great message capacity could not be built until metallurgists had discovered a new alloy of unusual magnetic properties. This alloy, known as "permalloy" in the United States and as "numetal" in England, is composed of nickel and iron and is more than 30 times easier to magnetize than soft iron, the metal which in the past has had the greatest magnetic permeability. Over 50,000 miles of fine wire made of this metal is wrapped around the copper conductor of the cable.

Another unusual feature of the cable which makes possible the sending of messages in both directions at the same time is the fact that there are "artificial cables" in both Newfoundland and the Azores which duplicate exactly the electrical characteristics of the cable actually under the water.

The resistance of the 1341.2 nautical miles of conductor is 4,521 ohms. When a 12-volt battery is used for sending in both directions at 1,400 letters a minute, a current of only six thousandths of an ampere is received at the other end of the line.

*Science News Letter, January 31, 1931*



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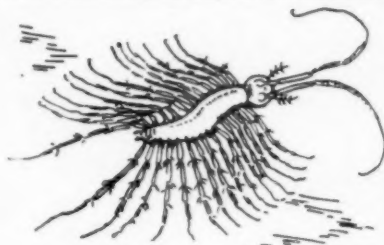
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ENTOMOLOGY

## Nature Ramblings

By FRANK THONE



### House Centipede

It is really a pity that the house centipede is such a wriggly, squirmy object, fit to send any good housewife into a conniption fit, and to make her reach for an annihilating broom at the same time. For it is the melancholy truth that this many-legged little racer across our walls and floors—even our ceilings—is classified as a household pest and yet is one of the most useful of all our domestic animals. Indeed, saving only the equally persecuted spider, he is about the only uninvited housemate of man that earns his keep. He does this as the spider does, by killing and eating the other uninvited guests—flies, roaches and similar nuisances.

Like the hunting spiders that spin no webs, the centipede does most of his stalking at night. Then all the diurnal insects, such as flies, are fast asleep, and the centipede, coursing rapidly around on the ceiling in the dark, literally stumbles on them and nabs them like a flash before they are sufficiently aroused to take flight. And of course the night-prowling vermin are just as much in the dark as he, and a collision is most likely to end in a meal—for the centipede.

In spite of his more or less terrifying appearance, the house centipede is utterly harmless to human beings. He has biting jaws and he has poison, but the jaws are too weak to go through even the tenderest of human skins, so the poison does no harm. And if caught by a curious child, the centipede rarely attempts to defend himself by biting, but prefers to break off several legs—which he can easily do and won't miss much anyway—and thereby escape. Afterwards he grows new ones at his leisure.

*Science News Letter, January 31, 1931*

Any soil that will grow a good crop of weeds will support a rose garden.

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## ETHNOLOGY

# Explains How "Spirits" Shake Tent in Indian Ceremony

Woman Visitor to Remote Chippewa Settlement Witnesses Rare Spectacle and Later Looks Behind the Scenes

A PLAUSIBLE explanation as to how an Indian spiritualistic seance, known as a tipi-shaking, really "works" has been reported for the first time, by Miss Frances Densmore, to the Bureau of American Ethnology.

Miss Densmore, well known for her studies of Indian music for the Bureau, has had the rare opportunity of observing a tipi-shaking ceremony on her latest field trip. The seance was conducted by a Chippewa Indian medicine man at Grand Portage, Minnesota. This is a remote Indian settlement, where many old native customs survive.

A tipi-shaking is usually held in order to summon the spirits, so that they may advise a medicine man in treating a serious illness, Miss Densmore explained. The medicine man, tightly tied, seats himself inside a little tipi, or pointed tent, which is just big enough to hold him. Then he frees himself from the ropes and beats his drum and sings to call the spirits.

When the tipi begins to shake as though a tornado was rocking it, the Indians gathered outside the tipi believe that the spirits are beginning to arrive. Voices can be heard inside the tipi. Sometimes the Indians around the tipi think they can recognize the voices of animals, representing the spirit of the mud turtle or the snapping turtle, or other animals. Sometimes voices are heard that sound like voices of people who happen to live miles away, or even the voices of dead people. If the voices speak loud and clear, the medicine man and the people are assured that the patient will recover.

Miss Densmore and her sister were crossing a field at dusk when they chanced to see the tipi-shaking going on. They knew they were observing a rare spectacle, something that few medicine men can conduct, and that fewer white people have ever glimpsed. They watched for an hour, seeing the tipi shake violently every few minutes. When they went closer, they could hear the medicine man singing inside and drumming. The songs were recognized

by Miss Densmore as medicine songs, such as are used in calling on the spirits. Between the spasms of shaking, the tipi stood perfectly still. There was no wind.

Next day Miss Densmore visited the medicine man, and by diplomatic measures arranged to see the tipi. She examined it at close range, inspecting the hoops and ropes that were inside the cloth covering. From this inspection, she believes that the ropes fastened to the hoops were probably manipulated in a clever way so as to make the tipi shake.

The hoops appeared to be a little larger than the circle of poles at the top, so that the jerking of the hoops would give enough play to throw the covering into a pendulum-like sway or a violent tumult.

The only suggestion as to how the tipi was rocked in such ceremonies has been that the onlookers were hypnotized. This explanation does not suffice, Miss Densmore said, since she and her sister were not among the medicine man's known audience.

The man for whose benefit the Chippewa tipi-shaking was held was suffering from incipient typhoid fever. As a result of the tipi-shaking, it was decided to hold a benefit dance, or rather a beneficial dance, for him, which Miss Densmore attended. The Indian dancers came together and danced so that the man might get well. What part all the ceremonies played in the career of his illness no one can say, but the man was recovering within two weeks, Miss Densmore was informed.

*Science News Letter, January 24, 1931*

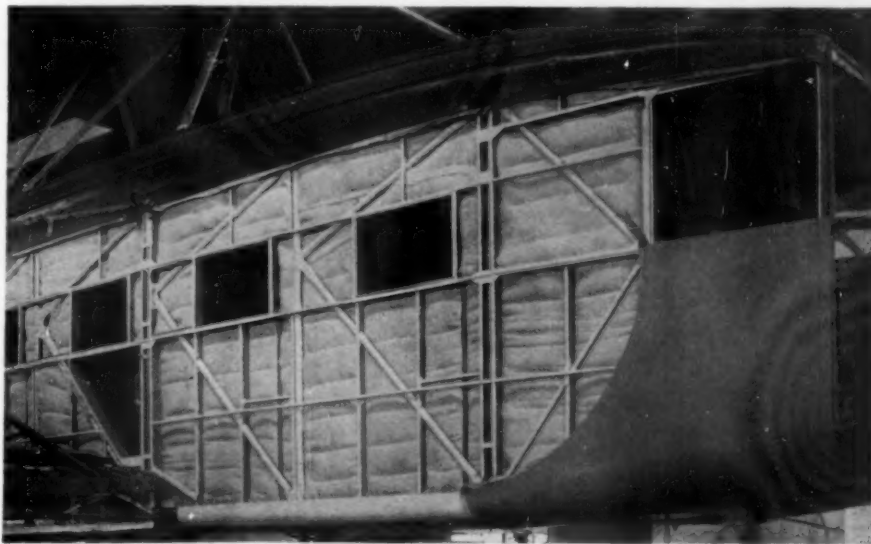
## ENTOMOLOGY

## Noxious Weed Nurses Japanese Beetle Enemy

WILD carrot, hated as a noxious weed by farmers and dairymen all over the country, has suddenly found a useful job. It affords a home and food to an insect newcomer brought to America from Japan to fight one of the most ravaging of pests, the Japanese beetle.

Two Bureau of Entomology workers, J. L. King and J. K. Holloway, describe the new insect ally of man and tell of the efforts, finally crowned with success, to get it firmly planted in its new home. They have found that the adult insects, which are little wasp-like creatures, make themselves at home in the flowers of wild carrot, feed there, and will not take kindly to any other plant.

*Science News Letter, January 31, 1931*



### PADDING AN AIRPLANE CABIN

Of a Curtis Condor. Studies at the U. S. Bureau of Standards have shown that this is the only successful way to silence an airplane and that by the use of the right kind of absorbent material noise can be reduced to about that in a moving railway coach. The insulating material must absorb. A cabin whose walls will not transmit sound may become as noisy as the motors outside if its walls will not absorb sound.

# • First Glances at New Books

## Statistics—Sociology

**POPULATION PROBLEMS**—Warren S. Thompson—*McGraw-Hill*, 462 p., \$3.75. Dr. Thompson, who is director of the Scripps Foundation for Research in Population Problems, discusses authoritatively many of the problems of our modern civilization: the declining birth rate, immigration, growth of the large city, concluding with a chapter on "Control of Population Growth."

*Science News Letter, January 31, 1931*

## Zoology

**ANIMAL LIFE OF YELLOWSTONE NATIONAL PARK**—Vernon Bailey—*Thomas*, 241 p., \$4. "Yellowstone" used to mean to the traveler merely geysers. But with increasing acquaintance, and especially with the now elaborately evolved program of information conducted by the National Park Service, we have come to realize that this first and greatest of the world's national parks offers at least equal attractions in its varied and unspoiled animal life. The bears, elk, bison and all the other four-footed and feathered citizens of the Yellowstone find here a sympathetic historian, full of the meat of many years of dealing with animals in the wild. The photographic illustrations are fully worthy of the excellence of the text.

*Science News Letter, January 31, 1931*

## Sports

**A STUDY OF BOWS AND ARROWS**—Saxton T. Pope—*University of California Press*, 102 p., 20 pl., \$2.50. Mr. Pope has an established reputation as a real expert on bows, not only knowing how to use them but being well informed in their history and in what might be termed "toxophysics." The present book is the record of a series of experiments with all types of bows, from both old world and new, representing a range of many centuries in time. The photographic illustrations are most excellent.

*Science News Letter, January 31, 1931*

## Engineering—Physics

**RECOMMENDED MINIMUM REQUIREMENTS FOR PLUMBING**—Bureau of Standards Subcommittee on Plumbing—*Government Printing Office*, 280 p., 35c. The report of one of the fundamental studies of the building and housing division of the U. S. Department of Commerce.

*Science News Letter, January 31, 1931*

## Psychology—Sociology

**FARM CHILDREN**—Bird T. Baldwin, Eva Abigail Fillmore and Lora Hadley—*Appleton*, 331 p., \$4. A most thorough and painstaking study of all the aspects of the lives of children on American farms as compared with children in the consolidated school district similar to the locality that was the birthplace of President Hoover. Here are described in detail the homes, religious training, physical condition, intelligence, educational achievement, musical talent, and daily activities of the children of rural Iowa.

*Science News Letter, January 31, 1931*

## Engineering

**A. S. T. M. TENTATIVE STANDARDS, 1930**—*American Society for Testing Materials*, 864 p., \$7. A splendid annual publication of value to all users of engineering materials.

*Science News Letter, January 31, 1931*

## Archaeology

**EXCAVATIONS AT ZACATENCO**—George C. Vaillant—*Amer. Museum of Natural History*, 197 p., \$2. The archaic culture of Mexico had no less than three stages, Vaillant has clearly demonstrated by his intensive excavations at a site near Mexico City. In the course of the excavations, a large collection of pottery, bone, and stone objects have been recovered, and chronological sequences carefully charted. So significant a piece of research deserves a detailed report, and Dr. Vaillant's is as complete as any one could ask. Nineteen burials, were found, but these are mentioned only incidentally as they are to be the subject of a separate, later report.

*Science News Letter, January 31, 1931*

## Botany

**AUSTRALIAN RAIN-FOREST TREES**—W. D. Francis—*Government Printer, Brisbane*, 347 p., 11s 6d. Full descriptions and astonishingly good photographic illustrations of all the non-tropical rain-forest trees of Australia. This book may be obtained from The Secretary, Council for Scientific and Industrial Research, 314 Albert Street, East Melbourne, Victoria, Australia.

*Science News Letter, January 31, 1931*

## Aviation

**AIRCRAFT BOOK FOR BOYS**—Dorothy Verrill—*Harpers*, 312 p., \$2.50. Boys now riding aviation as a hobby will read this book with pleasure and profit.

*Science News Letter, January 31, 1931*

## Essays

**A NUMBER OF THINGS**—Edwin E. Slosson—*Harcourt, Brace*, 342 p., \$2. No better quotation could be chosen for the title of this collection from the writings of the late director of Science Service. Dr. Slosson found the world so full of things as to be perpetually diverting. His pithy, ingenious, and thoughtful comments on literature and the human comedy in general were a feature of the *Independent* for the seventeen years that he served as literary editor of that publication. It is chiefly from those writings that his son, Dr. Preston Slosson, has made up this collection of his essays on non-scientific subjects.

*Science News Letter, January 31, 1931*

## Biology

**THE PROGRESS OF LIFE: A STUDY IN PSYCHOGENETIC EVOLUTION**—Alexander Meek—*Longmans, Green*, 193 p., \$4.20. The author states, "This book is not meant to introduce a new theory but to indicate a way to recover that elasticity of conception of the process of evolution which the behaviour of protoplasm invites and which the germ-plasm theory of development has for many years prevented."

*Science News Letter, January 31, 1931*

## Botany

**GENERAL ELEMENTARY BOTANY**—Elmer Campbell—*Crowell*, 410 p., \$3. A revised edition of a successful text.

*Science News Letter, January 31, 1931*

## Sociology

**YOUTH AND CRIME**—Dorothy Williams Burke—*Government Printing Office*, 204 p., 35c. A study of the prevalence and treatment of delinquency among boys over juvenile-court age in Chicago published as Bulletin No. 196 of the U. S. Children's Bureau.

*Science News Letter, January 31, 1931*

## Chemistry

**SECOND REPORT OF THE COMMITTEE ON PHOTOCHEMISTRY**—Hugh S. Taylor—*National Research Council*, 45 p., 50c. The more man knows about the way in which light brings about chemical reactions, the closer he will be towards a more effective utilization of raw materials and energy, including sunshine. This summary will interest those engaged in this important problem.

*Science News Letter, January 31, 1931*